

EFFECT OF CROPPING ON SOIL BACTERIA

Brown (Centralbl. Bakt. Abt. 2, XXXV, 1912, p. 248) has studied the effect of different kinds of cropping on the bacterial content of the soil. He finds that the number of microorganisms in the soil is much increased by rotation of crops as compared with continuous cropping. The same is true of the nitrifying and nitrogen-fixing powers of the soil. He compares various systems of alternation of crops in this regard. He also discusses the effect of turning under clover, as green manure. He claims that the two year rotation with green manuring is not so effective in increasing the bacteria and bacterial products as the longer term rotations. It is shown that the productivity of the soil is closely related to the bacterial activities within it.

ALTERNATION OF GENERATION IN THE PHLEOPHYCEÆ

In a beautifully illustrated article (Bot. Gaz. Dec. 1912) Yamanouchi gives, from the study of the nuclear and experimental conditions, the grounds for believing that *Cutleria multifida* is the gametophytic phase of a species of which *Aglaosonia reptans* is the sporophytic stage. The nuclei of both male and female *Cutleria* plants contain 24 chromosomes, which is true also of the gametes themselves. The sporelings resulting from the union of these gametes contain 48 chromosomes and develop into an *Aglaosonia* form similar to *A. reptans* in nature. On the other hand the nuclei of *Aglaosonia reptans* contain 48 chromosomes, which is reduced in zoospore formation to 24. These zoospores germinate without conjugation, and produce plants similar to young *Cutleria* in nature, and with 24 chromosomes.

EXPERIMENTS ON THE GERMINATION OF TELEUTOSPORES

Dietel (Centralbl. Bakt. II, 31:95, 1911) reports on the effects of age and temperature and drying, etc., on the germination of teleutospores of *Melampsora*. In the early spring these spores germinate in about 3 days if brought into favorable conditions of temperature and moisture. As the spores grow older the time necessary to germinate decreases. This might be due either to internal ripening or to the progressive changes in the spring tempera-